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U. S. Department of Agriculture.

CIRCULAR NO. 1.

United States Department of Agriculture,

DIVISION OF PUBLICATIONS.

ORGANIZATION OF DEPARTMENT OF AGRICULTURE, 1901-1902.

The organization of the Department of Agriculture has been notably changed in accordance with the plan indicated in the agricultural appropriation bill for the fiscal year ending June 30, 1902. Several branches of work heretofore conducted by independent Divisions have been grouped in a Bureau of Plant Industry. These were the Divisions of Botany, Pomology, Agrostology, Vegetable Physiology and Pathology, Seeds, and Gardens and Grounds. Also the appropriations for soils, chemistry, and forestry investigations were largely increased and those Divisions have been reorganized as Bureaus. The appropriation for the preparation of Farmers' Bulletins was more than doubled and additional provision has been made in the Division of Publications, under which this fund is administered, for a wider scope of activity in securing and preparing information for the direct assistance of the farmer.

These changes have been attended with a considerable readjustment of the official forces. A number of new assistants in the Bureaus named have been secured by the aid of the Civil Service Commission and several of those already employed have been assigned to new duties.

The reorganization is believed to be in the direction of economy of supervision and cooperation of effort. It provides for an effective coordination in plant investigations as there has been already for live stock in the Bureau of Animal Industry; it strengthens the forces devoted to the study of soils and of the problems of chemistry and of forestry; and it makes necessary and opens the way for further development of the facilities by which the Department reaches the public with the results of its work; viz, the preparation and publication of Farmers' Bulletins and similar pamphlets intended for wide popular distribution.

The principal changes are shown in the following statement of the organization and work of the Department on August 1, 1901, furnished by the chiefs of the several Bureaus, Divisions, and Offices.

GEO. WM. HILL,
Chief of Division.

Approved:

JAMES WILSON,

Secretary of Agriculture.

WASHINGTON, D. C., October 23, 1901.

OFFICE OF THE SECRETARY.

Secretary of Agriculture, JAMES WILSON.

The Secretary exercises personal supervision of public business relating to the agricultural industry. He appoints all the officers and employees of the Department with the exception of the Assistant Secretary and the Chief of the Weather Bureau, who are appointed by the President, and directs the management of all the Divisions, Offices, and Bureaus embraced in the Department. He exercises advisory supervision over the agricultural experiment stations deriving support from the National Treasury, and has control of the quarantine stations for imported cattle, and of interstate quarantine rendered necessary by contagious cattle diseases, including the inspection and transportation of cattle-carrying vessels. He also is charged with carrying into effect the laws prohibiting the transportation by interstate commerce of game killed in violation of local laws and excluding from importation certain noxious animals, with authority to control the importation of other animals.

The law establishing the Department, approved May 15, 1862, outlines the most important features of the work in the following provisions:

* * * * the general design and duties of which [Department of Agriculture] shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants. * * *

* * * to acquire and preserve in his Department all information concerning agriculture which he can obtain by means of books and correspondence and by practical and scientific experiments (accurate records of which experiments shall be kept in his office), by the collection of statistics, and by any other appropriate means within his power; to collect, as he may be able, new and valuable seeds and plants; to test by cultivation the value of such of them as may require such tests; to propagate such as may be worthy of propagation, and to distribute them among agriculturists. He shall annually make a general report in writing of his acts to the President and to Congress, in which he may recommend the publication of papers forming parts of or accompanying his report, which report shall also contain an account of all moneys received and expended by him. He shall also make special reports on particular subjects whenever required to do so by the President or either House of Congress, or when he shall think the subject in his charge requires it.

Assistant Secretary of Agriculture, JOSEPH H. BRIGHAM.

The Assistant Secretary of Agriculture performs such duties as may be required by law or prescribed by the Secretary. He also becomes the Acting Secretary of Agriculture in the absence of the Secretary.

Chief Clerk, ANDREW GEDDES.

The Chief Clerk has the general supervision of the clerks and employees; of the order of business, records, and correspondence of the Secretary's office; of all expenditures from appropriations for contingent expenses, stationery, etc.; of the enforcement of the general regulations of the Department; and of the buildings occupied by the Department of Agriculture.

Appointment Clerk, JOSEPH B. BENNETT.

The Appointment Clerk is charged by the Secretary with the preparation of all papers involved in making appointments, transfers,

promotions, reductions, furloughs, or dismissals, and has charge of all correspondence of the Department with the United States Civil Service Commission. He deals with all questions as to positions in the Department which are under civil-service rules.

Chief of Supply Division, CYRUS B. LOWER.

The Supply Division has charge of purchases of supplies and materials paid for from the general funds of the Department.

THE WEATHER BUREAU.

Chief, WILLIS L. MOORE; Private Secretary, EDGAR B. CALVERT; Chief Clerk, HENRY E. WILLIAMS; Assistant Chief Clerk, DANIEL S. CARROLL.

It is the duty of the Weather Bureau to make accurate record day by day of the existing atmospheric conditions, and to formulate therefrom for distribution, in the interest and for the benefit of agriculture, commerce, and navigation, forecasts of the weather that will probably obtain during the succeeding forty-eight hours.

For the purpose of making its daily atmospheric survey the Weather Bureau maintains a Central Office in Washington and about 180 subordinate stations in various portions of the United States and throughout the West Indies. In addition to these it receives through the courtesy of the Governments concerned daily telegraphic reports of observations made in Canada on the north, Mexico on the south, and in the Azores and along the western coast of Europe to the eastward, thus covering within its field of observation practically the whole of the inhabited portions of the North American Continent.

THE FORECAST DIVISION.

PROF. E. B. GARRIOTT, Supervising Forecast Official.

This Division receives and charts twice daily telegraphic reports of the prevailing weather conditions throughout the field of observation. From the observations thus charted the forecast official issues a statement of impending weather changes in all parts of the country, including the Great Lakes, the sea coasts, and the North Atlantic steamer route as far eastward as the Great Banks. In the case of severe disturbances warnings are sent, not only to the regular Weather Bureau stations along the Lakes and sea coast, but also to about 210 special storm-warning stations at the lesser ports and at exposed points visible from the fairway of vessels. The forecast official also issues warnings of approaching cold waves and heavy snows in the winter season, of frost in the spring and fall months, special attention being given to the needs of truck farmers in the Gulf and South Atlantic States.

THE RIVER AND FLOOD SERVICE.

HARRY C. FRANKENFIELD, Forecast Official.

The River and Flood service, as its name implies, is concerned with the navigable streams of the United States. In times of average or low-water stages its business is to facilitate commerce by giving information as to the stages of water along the course of each river; its chief function, however, is the issuance of flood warnings in time of threatened danger to life and property along the rivers.

This service maintains 203 special river stations in addition to the regular Weather Bureau stations along navigable streams. Fifty-one special rainfall-reporting stations are also maintained in the various watersheds.

THE CLIMATE AND CROP SERVICE.

JAMES BERRY, Chief.

The Climate and Crop service studies and reports upon the influence of weather upon the staple crops of the country. Climate and crop services have been organized in each State and Territory with headquarters at one of the regular Weather Bureau stations therein. The local or State services keep in constant touch with the weather and crop conditions throughout the country and report thereon weekly by telegraph to the central office in Washington, where the

results are analyzed and published in the Weekly Weather and Crop Bulletin. The climate and crop service also issues a weekly bulletin in the winter season showing the depth of snow that covers the winter wheat regions and the thickness of ice in the northern rivers and lakes. It also has charge of the distribution of weather forecasts.

THE DIVISION OF METEOROLOGICAL RECORDS.

PROF. ALFRED J. HENRY, *Chief.*

This Division is charged with the compilation of meteorological and climatic statistics and their application to the varied needs of individuals, corporations, cities, and courts of law. The data compiled in this division are also supplied to the health seeker and the settler to whom climate is a matter of primary importance in the selection of a place of residence.

THE INSTRUMENT DIVISION.

PROF. CHARLES F. MARVIN, *Chief.*

The Instrument Division, as its name indicates, is charged with the installation and maintenance of the instrumental equipment of Weather Bureau stations. The various instruments in use by the Weather Bureau are first examined and tested in this division.

THE BAROMETRY SECTION.

PROF. FRANK H. BIGELOW, *in Charge.*

In this Section a study is being made of the problem of reducing barometric readings to sea level.

THE MONTHLY WEATHER REVIEW.

PROF. CLEVELAND ABBE, *Editor.*

The Monthly Weather Review contains text, charts, and statistical tables, illustrating the dominant weather conditions of each month; it also contains a brief statement of the weather conditions in each State and Territory as bearing upon the staple crops, and special contributions devoted to the progress of meteorology.

THE TELEGRAPH SERVICE.

JESSE H. ROBINSON, *Superintendent.*

The Telegraph Service is charged with the arrangement and control of telegraph circuits, the maintenance and repairs of sea coast telegraph and telephone lines and the submarine cables connecting isolated and exposed points with the shore.

THE LIBRARY.

DR. WILLIAM F. R. PHILLIPS, *Medico-Climatologist, in Charge.*

The Library of the Weather Bureau contains about 23,000 volumes and pamphlets bearing directly on the work of the Bureau, as also an excellent card catalogue and bibliography; it is consulted daily by those interested in meteorology and its practical applications.

THE PUBLICATION DIVISION.

JOHN P. CHURCH, *Chief.*

This Division is charged with the publication, issue, and distribution of weather maps, the Monthly Weather Review, and various charts and miscellaneous printed matter pertaining to the Weather Bureau.

SUPPLY DIVISION.

FRANK M. CLEAVER, *Chief.*

This Division is charged with the purchase and issue of supplies, and the supervision of contracts.

BUREAU OF ANIMAL INDUSTRY.

Chief, D. E. SALMON, D. V. M.; Assistant Chief, ALONZO D. MELVIN, D. V. S.; Chief Clerk, S. R. BURCH.

The work of the Bureau of Animal Industry in a general way is to investigate the existence of communicable diseases dangerous to live stock; superintend measures for their extirpation; cooperate with the States and Territories in similar work within their borders; and to make original investigations as to the nature and prevention of such diseases. It inspects live stock and their products for food consumption when entering into interstate and export commerce; has charge of the inspection of import and export animals, of the inspection of vessels for transportation of export animals, and of the quarantine stations for imported animals; generally supervises the interstate movement of cattle; collects and disseminates information pertaining to dairy interests and foreign markets of dairy products; and reports on the condition and means of improving the animal industries of the country.

THE BIOCHEMIC DIVISION.

E. A. DE SCHWEINITZ, Ph. D., M. D., Chief.

This Division prepares material for stamping inspected meats; also prepares the tuberculin used at the agricultural experiment stations, in the quarantine service, and the mallein for diagnosing glanders in horses. Serum and other experiments in connection with hog cholera and swine plague are conducted by this Division. Serum is also prepared for use in connection with experiments with human tuberculosis. Other lines of work are: Metabolism experiments on chickens; analyses of different substances sent to the Division; milk investigations; the study of bacteriologic and biochemical factors in the production of flavor in butter and cheese; as well as the routine work of the office and laboratory.

THE DAIRY DIVISION.

HENRY E. ALVORD, C. E., Chief.

The Dairy Division maintains a general survey of the condition of the dairy industry of the country at large, in addition to special inquiries relative to the status of dairy organizations, dairy schools and facilities for technical instruction, State dairy laws, the development of foreign markets for the dairy products of this country, the milk supply of cities and towns, and laws and ordinances in reference thereto. Reports upon all these lines of work are prepared and published. The chief, assistant chief, and special agents visit the dairy centers of the States and the insular possessions of the United States, and in this way gather and disseminate information useful to the industry at large.

THE INSPECTION DIVISION.

A. M. FARRINGTON, B. S., D. V. S., Chief.

The Inspection Division has charge of the meat inspection which is by law assigned to the Bureau of Animal Industry. This includes antemortem and postmortem inspections of all animals for slaughter in stock yards and at abattoirs; the microscopic inspection of pork designed for export to countries requiring a certificate of inspection; the inspection of vessels for export animals; the inspection of Southern cattle in transit and the disinfection of the cars carrying them; the inspection, and when necessary dipping of sheep in interstate traffic to prevent the spread of scab.

MISCELLANEOUS DIVISION.

RICHARD W. HICKMAN, PH. G., Chief.

The general supervision of the accounts of the Bureau are under this Division, as follows: Salaries; reimbursement of expenses incurred by its officers and employees in travel and at various stations; apparatus and supplies for the various divisions of the Bureau, their laboratories, the Experiment Station, and quarantine stations; all accounts of every character that are paid from the appropriation for the Bureau. It also prepares an itemized report each year for Congress showing expenditures in detail; makes out all appointments, transfers,

promotions, furloughs, resignations, and dismissals; makes requisitions and invites informal bids for all materials and supplies used by the Bureau; supervises the work of the division of quarantines; and attends to the correspondence relative to all these lines of work, as well as to the miscellaneous correspondence of the Bureau.

THE PATHOLOGICAL DIVISION.

JOHN R. MOHLER, V. M. D., *Acting Chief.*

The work of this Division is chiefly along the lines of pathological diseases of animals. It prepares and distributes blackleg vaccine and tabulates the results for publication; investigates outbreaks of diseases among animals; determines pathological specimens referred to the Division for diagnosis; prepares answers to numerous inquiries regarding diseases of animals. The Division also has charge of the work relative to rabies in the District of Columbia. Reports are prepared and published upon the experimental work carried on.

THE ZOOLOGICAL DIVISION.

CH. WARDELL STILES, PH. D., *Zoologist.*

This Division collects and describes animal parasites of all kinds; determines such parasites as are sent to the Bureau and conducts correspondence regarding them; keeps a card index of animal parasites and a bibliography of literature relating to them; investigates diseases of parasitic origin, and prepares and publishes reports on such investigations.

THE EXPERIMENT STATION.

E. C. SCHROEDER, M. D. V., *Superintendent.*

The Experiment Station cooperates with the other divisions of the Bureau in experimental investigations; has immediate charge of the animals used for the production of hog cholera and swine plague serum; conducts experiments with reference to Texas fever. The Station is located at Bethesda, Md., where a small farm is maintained in such a manner as to supplement all investigations conducted by the several divisions of the Bureau.

THE EDITORIAL OFFICE.

GEORGE FAYETTE THOMPSON, *Editorial Clerk.*

The Annual Report of the Bureau is compiled in the Editorial Office; all manuscripts for bulletins and circulars are edited and such as require it are indexed; the proofreading for the Bureau is done here; special articles are prepared for the Report; correspondence is prepared with reference to goats and to statistics of animals and animal production.

BUREAU OF CHEMISTRY.

Chief, Dr. HARVEY W. WILEY; *Assistant Chief*, E. E. EWELL.

The Bureau of Chemistry traces its origin to the date of the establishment of the Department of Agriculture in 1862, during which year a chemist was appointed in conformity to the act of Congress to take charge of all chemical work relating to agriculture. The present Bureau, by direction of the Secretary of Agriculture, has charge of all the chemical work of the Department not otherwise provided for by law. Its chief purpose is to study the problems in which chemical research touches agriculture.

The subjects of investigation include soils, fertilizers, and irrigation waters; agricultural products; insecticides and fungicides; the foods of men and the lower animals; the raw materials, products, and processes of the agricultural-chemical industries; the variations in the chemical composition and in the other properties which modify the value of agricultural products depending on environment, particularly soil, latitude, altitude, and meteorological conditions; the quality of materials used in road construction; the examination of imported food products; and the inspection of food products intended for exportation.

In collaboration with the other Executive Departments, and with the various Bureaus, Divisions, and Offices of this Department, the work of the Bureau of Chemistry extends to the study of chemical problems arising in connection with the duties and investigations of the other branches of the Government.

THE FOOD LABORATORY.

W. D. BIGELOW, *In Charge.*

The Food Laboratory is charged with the study of the composition, nutritive value, and character of adulteration of human foods. By special provision of the Act of Congress making appropriations, for the Department of Agriculture, the Secretary of Agriculture is authorized to inspect and analyze in the Bureau of Chemistry samples of articles imported from foreign countries which he has reason to believe are so adulterated as to be dangerous to the health of the people of the United States; "to investigate the character of proposed food preservatives and coloring matters, to determine their relations to digestion and to health, and to establish the principles which should guide their use; to investigate the character of the chemical and physical tests which are applied to American food products in foreign countries, and to inspect before shipment, when desired by the shippers or owners of these food products, American food products intended for countries where chemical and physical tests are required before said food products are allowed to be sold in the countries mentioned." All of these special investigations are conducted in the food laboratory as thoroughly as the appropriation will permit.

The members of the scientific staff of this laboratory are: L. S. Munson, L. M. Tolman, Burton J. Howard, Arthur Given, John S. Burd.

THE SUGAR LABORATORY.

G. L. SPENCER, *In Charge.*

The Sugar Laboratory performs the analytical work in connection with the investigations relative to the influence of environment on the quality of sugar-producing plants and melons of which certain sugars seem to be the most important constituents determining their palatability and market value. The Bureau also collects information in regard to new and improved analytical and manufacturing methods of importance in connection with the development of the domestic sugar industries. Certain classes of the collaborative work with other branches of the Government call for the use of the equipment and working force of this laboratory.

The scientific staff of the laboratory includes, at present: A. Wilbur Bache, F. M. Cockrell, and other members of the scientific staff of the Bureau as the work from time to time requires.

THE DAIRY LABORATORY.

G. E. PATRICK, *In Charge.*

This Laboratory studies the chemical composition, physical and other properties of dairy products, as well as chemical problems connected with their production, transportation, storage and marketing; and investigates the methods employed for their adulteration and the manufacture and characteristics of the substitutes for them found in the market. This work is mostly done in collaboration with the Bureau of Animal Industry and includes analytical investigations in connection with the inspection of dairy products intended for export which the appropriation bill for the Department of Agriculture for the current fiscal year authorizes the Secretary to make through the Bureaus of Animal Industry and Chemistry.

The scientific staff of this laboratory includes at present: Duncan Stuart and J. H. Van Dyke.

ROAD-MATERIAL LABORATORY.

L. W. PAGE, *In Charge.*

This Laboratory was established in October, 1900, in collaboration with the Office of Public Road Inquiries of the Department, for testing road materials intended for use in any part of the United States. The laboratory will soon be equipped for the making of every test of importance for the determination of the suitability of all materials used in the construction of roads, including a fundamental study of their chemical and physical characteristics.

The scientific staff of this laboratory includes at present: Arthur N. Johnson, C. C. Moore, W. C. Burnet and Jno. H. Eldridge.

THE DENDRO-CHEMICAL LABORATORY.

W. H. KRUG, *in Charge.*

The work of this Laboratory is conducted in collaboration with the Bureau of Forestry, and includes investigations of the constituents of trees of commercial importance or which promise to become of commercial importance, particularly the study of tanning materials, resins, gums, etc., their composition and properties, distribution in the trees producing them; and investigations of the chemical technology of processes for the manufacture of tanning extracts, for the destructive distillation of wood for the manufacture of charcoal, wood alcohol, tar, acetone, and other products, the manufacture of wood pulp, the preservation of wood, and other chemical and techno-chemical processes relating to forest products.

The chemical investigations which relate to the influence of environment on the chemical composition of forest trees are made in this laboratory. The scientific staff consists of: John H. Norton and Eugene R. McCarthy.

MISCELLANEOUS INVESTIGATIONS.

The Bureau has in progress several important lines of work for which no separate laboratories have as yet been organized because of the limitation of funds at the disposal of the Bureau, or owing to the incipient stage of the work. Under the direction of the Chief and Assistant Chief the members of the scientific staff of the Bureau not allotted to the specially organized laboratories are employed on this work as follows:

E. G. Runyan, fertilizers, soils, and general miscellaneous work; T. C. Trescot, determination of nitrogen in all forms; J. K. Haywood, insecticides, potable and mineral waters. Members of the scientific staffs of the various laboratories, when necessary, are also called upon to assist.

MISCELLANEOUS COOPERATION.

In addition to the organized cooperation mentioned above with other Bureaus and Divisions of the Department, namely, with the Bureau of Forestry and the Bureau of Animal Industry, a general cooperation in investigations is conducted with most of the other Bureaus and Divisions of the Department.

COOPERATION WITH THE WEATHER BUREAU.

This cooperation, which has now extended over a period of several years, is of the greatest importance to the chemical investigations of the Weather Bureau. The particular line of cooperation at this time is a study of the effect of climatic environment upon the chemical composition of wheat and other cereals. The Weather Bureau supplies the Bureau of Chemistry with full meteorological data of the conditions existing at the stations where the cereals are grown. These stations are widely separated in order to secure the greatest variations in climatic conditions. The cereals are grown from the same kind of seed at each station and the variations in the product from the original sample and in the samples from various stations are carefully determined. The Chief of the Weather Bureau has promised a continuation of this cooperative work in order that the great problems of a chemical and climatic nature affecting the composition of garden and field products may be solved. Similar investigations are conducted with the sugar beet and with melons, and will be extended to other products highly susceptible to the influence of climate.

COOPERATION WITH THE VEGETABLE PATHOLOGIST.

Numerous investigations are conducted in the Bureau of Chemistry for the Vegetable Pathologist and the Cerealist. The results of these investigations are transmitted to the Office of the Vegetable Pathologist for incorporation in his records.

COOPERATION WITH THE ENTOMOLOGIST.

In cooperation with the Division of Entomology an attempt has been made to secure samples of all insecticides offered for sale in the United States. This cooperation will be continued as new insecticides are brought upon the market. One remarkable result of this investigation has been the discovery of extensive adulterations in insecticides whereby their efficiency has been either destroyed or greatly diminished without a corresponding decrease in their market price.

COOPERATION WITH BOTANICAL INVESTIGATIONS.

A laboratory in the Bureau of Chemistry has been equipped for the special study of poisonous plants in connection with botanical investigations. This work will be extended as rapidly as possible to embrace the study of all plants which are known to exert poisonous effects from the development either of alkaloidal bodies or of other toxic products.

COOPERATION WITH THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS.

The Bureau of Chemistry, and previous to its organization the Division of Chemistry, has been in collaboration with this Association since its organization. The Chief of the Bureau of Chemistry has been the Secretary of the Association for fifteen years, and the Department of Agriculture has published the proceedings and methods of analysis of the Association in the form of bulletins of the Division of Chemistry. Members of the scientific staff of the Bureau (or of the Division of Chemistry) have collaborated in the trial of methods and other work of the Association, and eight of the "referees" and "associate referees" appointed by the President of the Association to take charge of certain lines of collaborative work are members of the Bureau of Chemistry.

COOPERATION WITH THE EXPERIMENT STATIONS.

The Bureau of Chemistry, in order to study at widely different localities the effects of environment upon the chemical composition of agricultural products, has been fortunate in securing the active cooperation of the agricultural experiment stations of many of the States. In the work on sugar beets the following stations are cooperating:

Indiana, Iowa, Kentucky, Michigan, New York (Geneva and Ithaca), North Carolina, Utah, Virginia, and Wisconsin.

In the work on the composition of melons the Bureau is assisted by the following stations:

Arizona, California, Colorado, Delaware, Indiana, Kentucky, Maryland, North Carolina, New Jersey, and Texas.

In the work on the effect of environment on the composition of wheat the stations collaborating are: California, Colorado, Indiana, Kentucky, Maryland, Michigan, and Missouri.

In oenological investigations to determine the effect of different conditions upon the composition of ciders and other fermented beverages, the Experiment Station of Virginia has placed at our disposal its orchards and experimental cider factories.

COOPERATION WITH OTHER DEPARTMENTS OF THE GOVERNMENT.

During the past few years the cooperation of the chemical force of the Department of Agriculture has been asked by various Departments of the Government and has always been gladly granted by the Secretary of Agriculture. This collaboration has become organic in some cases, while in others it is still of a miscellaneous nature.

The Chemist is by appointment of the Secretary of the Treasury, Supervisor of Tests in the appraisers' office at the custom houses in New York, Philadelphia, and Boston, and maintains a system of analyses upon the correctness of the tests of samples of imported sugars at these ports. Monthly comparisons are made, and if any notable variations are observed an investigation is made and the cause of the discrepancy discovered.

For the War Department, analyses of samples of foods and other supplies are made for the information of the Commissary General in making contracts for the Army. Similar work is also done for the Navy Department. Very extensive investigations of spring and mineral waters on Government reservations are made for the Interior Department, besides considerable work of a miscellaneous character.

The Post-Office Department calls upon the Bureau of Chemistry to determine the character of substances suspected of being unmailable or of being sold in a fraudulent manner. Samples of beverages for sale on the Indian reservations are submitted by the Department of Justice, and of inks by the State Department. These are analyzed and reported upon in furtherance of the duties of these branches of the Government.

Finally, tests of paper are made for the Library of Congress and other Government organizations to determine its composition and durability.

BUREAU OF PLANT INDUSTRY.

*Physiologist and Pathologist and Chief of Bureau, BEVERLY T. GALLOWAY;
Chief Clerk, JAMES E. JONES.*

The Bureau of Plant Industry studies plant life in all its relations to agriculture. It includes Vegetable Pathological and Physiological Investigations; Botanical Investigations and Experiments; Pomological Investigations; Grass and Forage Plant Investigations; Experimental Gardens and Grounds; the Arlington Experimental Farm; Congressional Seed Distribution; Seed and Plant Introduction; and Tea Culture Experiments.

VEGETABLE PATHOLOGICAL AND PHYSIOLOGICAL INVESTIGATIONS.

ALBERT F. WOODS, Pathologist and Physiologist, in Charge.

These investigations have for their objects the study of diseases of agricultural crops and economic plants; nutrition of plants; rotation of crops; and the general application of the principles of pathology and physiology to agriculture; the problems of crop improvement; and the production of better varieties of agricultural plants and of crops resistant to disease by means of breeding and selection. The work is conducted by the following officers: Erwin F. Smith, Pathologist, in charge of laboratory of plant pathology; Walter T. Swingle, Physiologist, in charge of laboratory of plant physiology; Herbert J. Webber, Physiologist, in charge of laboratory of plant breeding; Newton B. Pierce, Pathologist, in charge of Pacific Coast laboratory; Hermann von Schrenk, Special Agent in charge of Mississippi Valley laboratory; Peter H. Rolfs, Pathologist, in charge of tropical laboratory; Merton B. Waite, Assistant Pathologist, diseases of orchard fruits; Mark Alfred Carleton, Cerealist; C. O. Townsend, Pathologist; George T. Moore, Physiologist; B. M. Duggar, Physiologist; Rodney H. True, Physiologist; William A. Orton, Assistant Pathologist; Joseph S. Chamberlain, Expert in Physiological Chemistry; Thomas H. Kearney, Assistant Physiologist; Cornelius F. Shear, Assistant Pathologist; Flora W. Patterson, Mycologist.

BOTANICAL INVESTIGATIONS AND EXPERIMENTS.

FREDERICK V. COVILLE, Botanist, in Charge.

This Office investigates botanical problems, including the purity and value of seeds; methods of controlling the spread of weeds and preventing their introduction into this country; the injurious effects and their antidotes in the case of poisonous plants; the native plant resources of the country; and other phases of economic botany. The Office includes: O. F. Cook, Botanist, in charge of tropical agriculture; A. J. Pieters, Botanist, in charge of seed testing laboratory; V. K. Chesnut, Botanist, in charge of investigations of poisonous weeds; Lyster H. Dewey, Assistant Botanist; Carl S. Scofield, Expert on Cereals.

GRASS AND FORAGE PLANT INVESTIGATIONS.

F. LAMSON-SCRIBNER, Agrostologist, in Charge.

This Office studies the natural history, geographical distribution, and uses of grasses and forage plants, as well as their adaptation to special soils and climates; introduces promising foreign varieties; and investigates the methods of cultivation of native and foreign sorts. In it are included: A. S. Hitchcock, Assistant Agrostologist, in charge of field work; David Griffiths, Assistant Agrostologist, in charge of field management; Elmer D. Merrill, Assistant Agrostologist, in charge of collections; C. R. Ball, Assistant Agrostologist.

POMOLOGICAL INVESTIGATIONS.

GUSTAVUS B. BRACKETT, Pomologist, in Charge.

This branch of the Bureau collects and distributes information in regard to the fruit interests of the United States; investigates the habits and peculiar qualities of fruits; their adaptability to various soils and climates, and conditions of culture. It studies the methods of harvesting, handling, and storing fruits with a view to improving our own markets and extending them into foreign countries. It includes: William A. Taylor, Pomologist, in charge of field investigations; H. P. Gould, Pomologist, in charge of fruit district investigations; George C. Husmann, Expert, in charge of grape investigations.

EXPERIMENTAL GARDENS AND GROUNDS.

(Under the immediate direction of Chief of Bureau.)

This branch is charged with the care and ornamentation of the parks surrounding the Department buildings; with the duties connected with the conservatories and gardens; and with the testing and propagating of economic plants. It carries on investigations for the purpose of determining the best methods of improving the culture of plants under glass, and other lines of investigations connected with intensive horticulture. Its work is in charge of L. C. Corbett, Horticulturist; E. M. Byrnes, Head Gardener; George W. Oliver, Expert Plant Propagator.

CONGRESSIONAL SEED DISTRIBUTION.

(Under the immediate direction of Chief of Bureau.)

This Office is charged with the purchase and distribution of valuable seeds. The seeds are distributed in allotments to Senators, Representatives, Delegates in Congress, and the Agricultural Experiment Stations; and also by the Secretary of Agriculture, as provided for by law. The Office includes: Robert J. Whittleton, Superintendent of Weighing and Mailing Section; James Morrison, Superintendent of Records.

SEED AND PLANT INTRODUCTION.

(Under the immediate direction of Chief of Bureau.)

This work has for its object the securing from all parts of the world of seeds and plants of new and valuable agricultural crops adapted to different parts of the United States. The officers are: Ernst A. Bessey, Assistant in Charge; David G. Fairchild, Permanent Agricultural Explorer.

ARLINGTON EXPERIMENTAL FARM.

(Under the immediate direction of Chief of Bureau.)

The Experiment Farm is designed ultimately to become an adjunct to all branches of the Department. It will carry on investigations in the testing of agricultural crops, fruits, and vegetables. L. C. Corbett, Horticulturist, is in charge.

TEA CULTURE EXPERIMENTS.

(Under the immediate direction of Chief of Bureau.)

This branch of the Bureau has for its object the study of tea with a view to producing it in this country. Experiments are conducted in tea culture, and methods of growing, curing, and handling the tea are being worked out. The work is carried on at Summerville, S. C., and the officer in charge is Dr. Charles U. Shepard.

OFFICE OF EXPERIMENT STATIONS.

Director, A. C. TRUE; Assistant Director, E. W. ALLEN.

The work of the Office of Experiment Stations includes: (1) Relations with American and foreign institutions for agricultural education and research, together with the supervision of expenditures of the agricultural experiment stations in the United States; (2) the preparation of publications mainly based on those of the experiment stations; (3) the management of the experiment stations in Alaska, Hawaii, and Porto Rico; (4) the supervision of special investigations ordered by Congress and assigned to the Office by the Secretary of Agriculture, which involve cooperation with the agricultural colleges and experiment stations. At present these include investigations on the nutritive value and economy of human foods, and on irrigation.

RELATIONS WITH INSTITUTIONS FOR AGRICULTURAL EDUCATION AND RESEARCH.

(Under the immediate supervision of the Director, assisted by W. H. Beal and D. J. Crosby.)

The Office represents the Department in its relations with the agricultural colleges and experiment stations established under the acts of Congress of July 2, 1862, March 2, 1887, and August 30, 1890, which are now in operation in

all the States and Territories. It collates and publishes information regarding the organization, equipment, resources, and work of the agricultural colleges, schools, experiment stations, farmers' institutes, and similar institutions in this and other countries. It indicates lines of inquiry, aids in the conduct of cooperative experiments, reports upon the expenditures and work of the stations, and in general furnishes them with such advice and assistance as will best promote the purposes for which they were established.

EXPERIMENT STATION RECORD.

E. W. ALLEN, *Editor.*

The Experiment Station Record, begun in 1889, comprises abstracts of the bulletins and annual reports of the experiment stations in the United States, the publications of the United States Department of Agriculture, books, journals, and miscellaneous publications containing reports of investigations in agricultural science in the different countries of the world; special articles by American and foreign experts in agricultural science; editorials on important matters regarding the progress of agricultural education and science; suggestions of lines of inquiry for our stations; and notes on the organization, equipment, and development of institutions for agricultural education and research at home and abroad. Each volume of the Record consists of twelve numbers, the last of which contains detailed author and subject indexes. This journal is sent without charge to institutions for agricultural education and research in this country and the officers of such institutions, to similar institutions in foreign countries, important libraries, and to a select list of scientists and specialists who cooperate with the Department by furnishing information, exchanging publications or otherwise. It is also sold by the Superintendent of Documents at 10 cents a number or \$1 a volume. The editorial staff engaged in the preparation of this journal is as follows: Chemistry, Dairy Farming, and Dairying, The Editor and H. W. Lawson; Meteorology, Fertilizers, and Soils (including methods of analysis), and Agricultural Engineering, W. H. Beal; Botany and Diseases of Plants, Walter H. Evans; Foods and Animal Production, C. F. Langworthy; Field Crops, J. I. Schulte; Entomology and Veterinary Science, E. V. Wilcox; Horticulture, C. B. Smith.

EXPERIMENT STATION WORK AND MISCELLANEOUS PUBLICATIONS.

W. H. BEAL, *Editor.*

The bulletins and miscellaneous publications of the Office may be classified as follows: (1) Technical bulletins; (2) Farmers' Bulletins, including the sub-series entitled Experiment Station Work; (3) Card Index of Experiment Station Literature; (4) circulars; (5) miscellaneous publications, comprising schedules, articles published as separates from the Yearbook of the Department and Experiment Station Record, and charts.

General editorial supervision of the bulletins and miscellaneous publications of the Office is assigned to W. H. Beal, who is assisted by the staff of the Experiment Station Record.

ALASKA AGRICULTURAL EXPERIMENT STATION.

C. C. GEORGESON, Sitka, *Special Agent, in Charge.*

The agricultural investigations in Alaska are conducted under the direction of this Office. The main station is located at Sitka. Investigations are also carried on at Kenai in Cook Inlet and Rampart in the Yukon Valley. The work consists of field experiments with vegetables, cereals, and forage plants; the maintenance of live stock; the curing of hay and silage; the distribution of seeds; and an agricultural survey of the Territory. Besides the special agent in charge, the officers of the station are as follows: F. E. Rader, Assistant at Sitka; H. P. Nielsen, Assistant at Kenai; Isaac Jones, Assistant at Rampart.

HAWAII AGRICULTURAL EXPERIMENT STATION.

JARED G. SMITH, Honolulu, *Special Agent, in Charge.*

The Hawaii Agricultural Experiment Station has recently been established under the direction of this Office, with headquarters at Honolulu, where a tract of land has been reserved for its use by the Hawaiian Government. The investigations will include experiments with coffee, forage crops, and horti-

cultural plants, and investigations on feeding live stock and dairying. Besides the special agent in charge, the officers of the station are as follows: T. F. Sedgwick, Assistant; F. E. Conter, Assistant.

PORTO RICO AGRICULTURAL EXPERIMENT STATION.

F. D. GARDNER, San Juan, *Special Agent, in Charge.*

An agricultural experiment station under the direction of this Office is being established in Porto Rico, the headquarters at present being at San Juan. Investigations will be made by this station on questions relating especially to the growing of coffee, sugar cane, forage crops and horticultural plants, and the development of animal industry and dairying. The officers of the station are the special agent in charge and James Mackinlay, Assistant.

NUTRITION INVESTIGATIONS.

W. O. ATWATER, Middletown, Conn., *Special Agent, in Charge.*

The investigations on the food and nutrition of man in charge of this Office include: (1) Dietary studies; (2) digestion experiments; (3) cooking experiments; (4) metabolism experiments.

Investigations are carried on largely in cooperation with the agricultural colleges and experiment stations in different parts of the country. The headquarters of the investigations are at Middletown, Conn., where the following officers, in addition to the special agent in charge, are located: F. G. Benedict, Physiological Chemist; A. P. Bryant, Editorial Assistant; R. D. Milner, Assistant; C. D. Woods, Special Agent at Orono, Me.

IRRIGATION INVESTIGATIONS.

ELWOOD MEAD, *Irrigation Expert, in Charge.*

The irrigation investigations in charge of this Office include: (1) The study of the laws and institutions relating to irrigation in different regions; (2) the determination of the actual use made of irrigation waters in the production of crops. These investigations are carried on in different parts of the country, largely in cooperation with the agricultural colleges and experiment stations and the State irrigation offices. A station for the supervision of field investigations is maintained at Cheyenne, Wyo., with which the following officers are connected: C. T. Johnston, Expert Assistant, in charge; R. P. Teele, Editorial Assistant; J. M. Wilson, in charge of California investigations; J. D. Stannard, in charge of Nevada investigations; A. P. Stover, in charge of seepage investigations; Frank Bond, in charge of investigations on rice irrigation; C. E. Tait, Expert Assistant.

BUREAU OF FORESTRY.

Forester and Chief, GIFFORD PINCHOT.

The Bureau of Forestry through its Division of Forest Management prepares and executes working plans for the conservative lumbering of National, State, municipal, and private forests. It studies commercially valuable trees to determine their special uses in forestry, and investigates the relations between the forest and fire, grazing, lumbering, stream-flow, and irrigation; investigates trees and methods for planting, and gives practical assistance to tree-planters; and maintains a photographic laboratory and collection, and a library. Printed reports and correspondence disseminate the information gathered by the Bureau regarding forestry and allied subjects.

For the fiscal year 1902 Congress appropriated \$185,440 for the expenses of this Bureau. The appropriation for the Division of Forestry in 1901 was \$88,520, and in 1899 it was only \$28,520. These figures show how rapidly the forest work of the Government has expanded of late, and also how well it has commended itself to Congress.

The change from a Division to a Bureau, and the larger appropriation, have made possible both an improved office organization and more extended field work. The Bureau has been provided with a much larger office force and organized in three Divisions. But field work, not office work, is what the Bureau exists for. This work has been going on during the last year from Maine to California and from Georgia to Washington. It includes the study of forest

conditions and forest problems all over the country, the giving of advice to owners of forest lands, and the supervising of conservative lumbering operations which illustrate forest management on business principles. This work can now be greatly extended. Private owners of some three million acres have applied for this advice, which in every case requires personal examination, and about 177,000 acres have been put under management. This land is in many tracts, large and small, and is owned by individuals, clubs, and corporations. Several State governments have also asked the aid of the Bureau. But the greatest demand is that of the Department of the Interior of the National Government, which has asked for working plans for all the Forest Reserves, with the enormous total area of about 47,000,000 acres.

The Bureau is made up of the Division of Forest Management, the Division of Forest Investigation, and the Division of Records. Each of these continues, with enlarged facilities, work which was in progress under the old Division of Forestry.

FOREST MANAGEMENT.

OVERTON W. PRICE, *Assistant Forester, in Charge.*

When the owner (private or public) of woodland wishes to consider the possibilities of his property if handled as a constant source of timber supply, the tract must be examined by an expert to ascertain the condition of the standing timber, the prospects of reproduction, the facilities for marketing, the best method of harvesting the present crop so as to secure the largest present and future yield, and the likelihood of success under management. A preliminary report is then made. If the owner decides on management, a working plan follows. This involves a careful study of the rate of growth of the different kinds of marketable timber, the computation of the proper interval between cuttings and of the amount of timber to be harvested, and, if desired, the recommendation of the necessary regulations to enable the work to go on under contract. The work on small wood lots is done without expense to the owner, but in the case of large tracts of land the traveling expenses and subsistence of the necessary assistants and helpers for the Bureau is borne by the proprietor. All this falls to the Division of Forest Management.

FOREST INVESTIGATION.

GEO. B. SUDWORTH, *Assistant Forester, in Charge.*

This Division makes studies of trees—of their rates of growth, distribution, reproduction, and habits—and investigates all the forest problems connected with fires, lumbering, grazing, tree-planting, stream flow, and erosion.

RECORDS.

OTTO J. J. LUEBKERT, *Chief.*

This Division takes charge of all office and routine matters, and also has custody of the library of literature bearing on forestry, and of a unique collection of photographs, which is continually being added to, illustrating forest conditions all over the United States.

BUREAU OF SOILS.

Soil Physicist and Chief of Bureau, MILTON WHITNEY; Chief Clerk, A. G. RICE.

The Bureau of Soils is charged with the study of soil problems in their relation to practical agriculture; with the investigation of the physical and chemical properties of soils and of the materials and methods involved in artificial fertilization and its influence upon the original soils; with the classification and mapping of soils in agricultural districts to show the distribution of the various soil types with a view to determining their adaptability to certain crops and their management and treatment; with the investigation of alkali problems and their relations to irrigation and seepage waters, the causes of the rise and accumulation of alkali and the reclamation of abandoned lands; with the investigation of tobacco soils and the methods of cultivation and of curing, with especial reference to fermentation; the introduction, through selection and breeding, of improved varieties into the principal tobacco districts of the United States, and to secure, as far as may be possible, a change in the methods of supplying tobacco to foreign countries.

LABORATORY OF SOIL PHYSICS.

LYMAN J. BRIGGS, *Soil Physicist, in Charge*; E. N. DORSEY, *Assistant Soil Physicist*.

The duties of the Laboratory of Soil Physics includes the investigation of the physical properties of soils and their economic bearing; the physical examination and mechanical analyses of soil types established by soil survey parties; the preparation and testing of apparatus used in field work; and the investigation from a physical standpoint of such special soil problems as may arise.

LABORATORY OF SOIL CHEMISTRY.

FRANK K. CAMERON, *Soil Chemist, in Charge*.

The Laboratory of Soil Chemistry has under its jurisdiction the investigation of the chemical properties of soils in their relation to plant growth; the chemical examination and analyses of soil types and the study of their requirements with regard to fertilization; the investigation of alkali problems and the general direction of chemical methods in use by field parties. The soil chemist in charge is assisted by Fletcher P. Veitch, Soil Analyst, and Atherton Seidell, Soil Analyst.

SOIL SURVEY.

(Under the immediate supervision of Chief of Bureau.)

The Soil Survey is charged with the classification of soil types and the actual surveying and mapping of selected areas in various parts of the United States, the results of which are published each season in the "Field Operations of the Bureau of Soils," together with descriptions of the location and boundaries of areas, history of settlement and agricultural development, climatic conditions, physiography and geology, characteristic soil types, special soil problems, methods of cultivation and irrigation, drainage and seepage waters, alkali, reclamation of abandoned lands, and general agricultural conditions. In these publications are also contained lithographic maps indicating in colors the location and distribution of principal soil types, together with chemical and physical analyses of these soil types compiled by the laboratories, and recommendations are made looking to improved methods of fertilization and cultivation, and the possibilities of the introduction of new crops.

For administrative purposes the Soil Survey is divided broadly into an Eastern Division and a Western Division, the separation being based upon the character of the work, as the Western work has been confined almost exclusively to the irrigated areas where use of irrigated water and the frequent occurrence of alkali present a distinct character of problems requiring a special training and special apparatus.

The organization and personnel of the Soil Survey is as follows: Soil Survey, Western Division, Thomas H. Means, in charge; Soil Survey, Eastern Division, Clarence W. Dorsey, in charge.

Field Parties, with the following assistants in charge: Jay A. Bonsteel, Charles N. Mooney, W. G. Smith, R. T. Avon Burke, J. E. Lapham, E. O. Fippin, George N. Coffey, Frank Bennett, jr., F. W. Taylor, Macy H. Lapham, Charles A. Jensen, J. Garnett Holmes.

TOBACCO INVESTIGATIONS.

MARCUS L. FLOYD, *Tobacco Expert, in Charge*.

The study of the adaptability of certain soils to the production of different varieties of tobacco, the methods of cultivation, of curing, and the introduction of improved types into areas adapted to them, constitute the principal lines of work of this branch of the Bureau. Practical experiments are being conducted with a view to the introduction of the finer grades of Sumatra and Havana cigar types into localities adapted to their cultivation, and further experiments will be carried on looking to the improvement and increased production of standard varieties in sections where they are already grown. The introduction and successful growth of the high-priced Sumatra wrapper in Connecticut which promises to practically do away with the importation of about \$6,000,000 worth of tobacco per annum, and the improved method of fermentation in Pennsylvania, resulting in a saving of considerably over half a million dollars annually to the tobacco industry of that State, may be cited as illustrations of the lines of work intrusted to this branch of the service. The study of the requirements

of foreign markets and of the methods of cultivation, curing, and marketing in competing countries, and the dissemination of information thus obtained, fall within the province of this Division. Assistants in this work are: George T. McNess, and George B. Massey.

DIVISION OF STATISTICS.

Chief Statistician, JOHN HYDE; Assistant Statistician, VICTOR H. OLMSTED.

The Statistician, through the agency of about 250,000 correspondents, collects statistics and makes estimates concerning the products of agriculture. He estimates the area annually sown to corn, wheat, oats, barley, rye, buckwheat, potatoes, hay, and cotton, and collects information throughout the growing season concerning the condition of these crops, as to growth and vitality, on the first day of each month. At the close of the crop year he calculates the quantitative results of the harvest of each of these products, and estimates their farm value on December 1. Complementary to the above system, he collects information at regular intervals concerning the growth and vitality of meadows, pastures, clover, timothy, sugar cane, sorghum, tobacco, rice, hops, apples, peaches, pears, and grapes. Similar information as to the principal foreign crops is obtained through direct cablegrams from foreign Governments, and through consular, agricultural, and commercial authorities.

Under the direction of the Statistician, particular subjects affecting agricultural interests are investigated and the results of such investigations are published, from time to time, in bulletin form.

The Statistician makes estimates of the stocks of corn, wheat, and oats held on farms in the United States at certain fixed and regular dates, and indicates the proportion of these crops that has then been shipped out of the county where grown.

He estimates the number and value, by species, of animals on farms in the United States at the beginning of each year, and indicates the annual losses from disease and exposure. He calculates the quantity of wool produced annually and estimates the average weight of fleeces by States and Territories.

He compiles and tabulates, from official and commercial sources, the world's production by countries, of corn, wheat, oats, barley, rye, sugar, flax, and hops; and records and tabulates prices of the principal agricultural products in various markets of the United States.

He records, tabulates, and coordinates statistics of agricultural production, distribution, and consumption, the authorized data of Governments, institutes, societies, boards of trade, chambers of commerce, produce exchanges, trade journals, and individual experts.

Concise statements of the more important results of his investigations concerning domestic agriculture are promptly and simultaneously disseminated by telegraph through all the States and Territories; and cards, upon which are printed such results, as soon as ascertained, each month, are immediately sent by mail to every postmaster in the United States to be conspicuously posted in his office for the information of the public. Detailed statements of the results of investigations concerning both domestic and foreign agriculture are issued through an official monthly publication entitled the *Crop Reporter*, designed for general circulation among producers and consumers.

One hundred and thirty persons are employed under the direction of the Statistician, the principal employees being as follows:

Section Chiefs: T. B. Harrison, J. H. Blodgett, G. W. Baumann. Statistical Experts: George K. Holmes, E. T. Peters, J. L. Watkins, E. G. Ward. Expert Compilers: C. M. Daugherty, H. A. Vieth, C. C. Clark, D. W. Stier. Librarian: Miss E. H. Quinn. Field Agents: E. S. Holmes, jr., B. C. White, T. B. Baldwin, Oswald Wilson.

DIVISION OF PUBLICATIONS.

Editor and Chief, GEO. WM. HILL; Associate Editor, JOS. A. ARNOLD; Assistant Chief, B. D. STALLINGS.

The Division of Publications is the publishing house of the Department of Agriculture. Its force comprises editors, proof readers, compilers, indexers, abstracters, artists, draftsmen, engravers, and photographers, together with clerks and laborers engaged in the distribution of the publications. The Divi-

sion is charged with (1) supervision and equitable assignment of printing fund (\$110,000) and the general charge of expenditures under the appropriation for Farmers' Bulletins, artists and illustrations, artists' material and material and labor in the distribution of documents aggregating \$308,020; (2) editing the Yearbook and the regular bulletins, reports, and circulars; (3) the supervision of the printing and binding done for the Department in both the main and the branch office of the Government Printing Office; (4) the preparation of drawings for illustrations and wood engravings; (5) the distribution of Department publications; (6) the preparation and distribution of official information and of advance notices of publications to agricultural writers and papers; (7) the preparation, printing, and distribution of Farmers' Bulletins.

EDITORIAL WORK.

The editorial work involves the editing and preparation for printing of all the publications of the Department, with the exception of those issued from the Weather Bureau, and including the Yearbook and Farmers' Bulletins. The total number of printed pages of new matter so edited and prepared in the fiscal year 1901 was 14,656, besides 9,139 of matter revised or reprinted. It involves also the general oversight and proof reading of all the job work and other printing done in the Branch Printing Office. The number of requisitions for printing issued to the Public Printer from the editorial office during the fiscal year 1901 was: Main Office, 626; Branch Office, 2,092.

The editorial corps includes, besides the Editor, the Associate Editor, and the Assistant Chief, Assistant Editors and Editorial Clerks, as follows: Charles H. Greathouse, A. I. Mudd, S. E. Thornton, and Ephraim Cornman.

YEARBOOK.

The preparation of the Yearbook of the Department, which occupies a considerable portion of the time of this Division, involves the selection of timely articles and the presentation of the year's progress in agriculture. The editing of this material and putting it in form for the printer, the selection and making of illustrations, reading proof, indexing, and final supervision of publication is in progress during the greater part of each year.

The Yearbook is edited, under the personal direction of the Secretary, by the Editor in Chief, with the assistance mainly of B. D. Stallings and Charles H. Greathouse.

FARMERS' BULLETINS.

The Division of Publications is charged by law with the preparation and issue of short treatises in plain language which will be directly useful to farmers in the practical work of agriculture. These publications are intended to give clear directions for work, and have no place for theory nor discussion. They are expected to embody the settled results of investigations by the scientific Divisions of the Department and of the Experiment Stations, but also present other important agricultural methods or facts not otherwise brought to the attention of farmers generally. Under the law four-fifths of all the Farmers' Bulletins printed are distributed upon the orders of Senators, Representatives, and Delegates in Congress. Last year the total number of these bulletins printed was 3,345,000 copies.

This branch of the work is under the immediate charge of the Associate Editor, Jos. A. Arnold.

DOCUMENT SECTION.

Under Section 92 of the act providing for the public printing and binding and the distribution of public documents, approved January 12, 1895, the duty of distributing the publications of the Department of Agriculture is assigned by the Secretary to the Editor and Chief, who is required to keep a detailed account of all publications received and distributed and to take measures to avoid duplication. The work is under the immediate direction of R. B. Handy as Assistant in Charge of the Document Section.

This Section receives from the Public Printer, cares for, and distributes all the publications of the Department of Agriculture. A large force of clerks and laborers is employed in directing franks under which the documents are mailed, in keeping account both of their distribution to Congressmen and to miscellaneous applicants, and in storing, folding, wrapping, and other work incidental to mailing the publications.

The extensive correspondence in replying to applicants for publications, the keeping of card indexes, the preparation of registry lists, and the care of the mailing lists of the Department necessitate the employment of a large corps of clerks, besides a very large force of folders and laborers.

ILLUSTRATIONS.

In this branch of the work a corps of artists, draftsmen, wood-engravers, photographers, and clerks, is engaged in the preparation of the illustrations for the publications of the Department. In the type room are preserved the originals of these illustrations (except lithographs), from which electrotypes are furnished to applicants at a nominal cost. This office purchases all instruments and artists' material required in the work of illustrations, and supplies the same to other Bureaus, Divisions, and Offices of the Department, in which artists and draftsmen are employed.

This part of the work is under the immediate supervision of the Associate Editor, Jos. A. Arnold.

THE BRANCH PRINTING OFFICE.

The Branch Printing Office in the Department is utilized for the printing of letter heads, envelopes, note heads, circulars, labels, blanks, postal cards, small bulletins, etc. Since the Office was by law made a part of the Government Printing Office, its facilities have been greatly increased and the quality of the work very much improved, so that work that was of necessity formerly sent to the Main Office is now done to our entire satisfaction in the Branch Office. During the last year the various kinds of job work done aggregated 15,267,472 copies. Frank Wallace is the foreman in charge.

Under the law the Editor and Chief of the Division of Publications is designated by the Secretary of Agriculture to be responsible for the work done in the Branch Office, and he is required to make out all requisitions for work therein and submits a quarterly report thereon. Charles H. Greathouse has immediate supervision of the printing.

DIVISION OF ENTOMOLOGY.

Chief, L. O. HOWARD; Assistant Chief, C. L. MARLATT.

The Division of Entomology studies the entire field of insect life in its relations to humanity. Primarily its work is directed to the study of insects which are injurious to agriculture, horticulture, and live stock, directed toward the practical end of remedies. It studies, therefore, such insect enemies with the greatest possible care, conducts extensive experiments in the field and in the laboratory with different classes of remedies, and publishes bulletins and circulars giving the results of its investigations. In the same way it studies insects affecting stored products, and insects directly injurious to man himself.

It also makes a study of beneficial insects as well as injurious ones, not only such insects as are the source of industries, like the honey bee, the silkworm, and the fig-fertilizing insect, but also such as prove beneficial through the fact that they destroy injurious insects, as the parasites and predatory enemies of injurious insects. For the purpose of discovering the most beneficial of this latter class of insects it has correspondents in all parts of the world, and has sent agents to foreign countries. The Division also makes large collections of insects, and employs an expert force which sends information concerning the identity of species to the entomologists of experiment stations and to agriculturists.

It also studies the geographic distribution of injurious insects, and their relations to climate, weather, and temperature. It collects insecticidal machinery and different insecticidal chemicals, and is constantly experimenting with them and making improvements.

DIVISION OF BIOLOGICAL SURVEY.

Chief, C. HART MERRIAM; Assistant Chief, T. S. PALMER.

The Division of Biological Survey studies the geographic distribution of animals and plants, and maps the natural life zones of the country; it also investigates the economic relations of birds and mammals, recommends measures for the preservation of beneficial and the destruction of injurious species,

and has been charged with carrying into effect the provisions of the Federal laws for the importation of wild birds and other wild animals and for the protection of game by control of interstate trade in game, and other means.

The assumption of the varied duties connected with carrying out this law necessitated some reorganization of the Division. It is now divided into three sections, the work being distributed as follows: (1) Biological surveys and investigations of the geographic distribution of mammals and birds, under the immediate direction of the Chief of the Division; (2) investigations to determine the relation of birds to agriculture, their food habits, etc., in charge of Prof. F. E. L. Beal; (3) supervision of matters relating to protection of game and the importation of foreign birds and animals, in charge of the Assistant Chief, Dr. T. S. Palmer.

OFFICE OF PUBLIC ROAD INQUIRIES.

Director, MARTIN DODGE; Assistant Director, MAURICE O. ELDRIDGE.

The Office of Public Road Inquiries investigates systems of road management throughout the United States; studies the best methods of road making and road maintenance; conducts investigations and experiments regarding the best methods of road building, and analyzes the chemical and physical qualities of rock, gravel, brick, and other road materials. The investigations of the Office are mainly directed: (1) To ascertaining, as nearly as practicable, the actual cost of bad roads and the benefit of good roads; (2) to demonstrating the interest of cities and towns, and the owners of property of all kinds wherever situated, in the improvement of country roads; (3) to developing the methods by which all of these interests may cooperate with the farmers in the work of road improvement; (4) to discovering what actual and systematic road improvement is being carried on in any part of the United States, and how the same or modified methods may be applied to other sections; (5) to discovering road materials in the various sections of the country; (6) to discussing new plans for road construction and encouraging experiments in this direction.

In addition to publishing reports on these subjects the Office cooperates with the agricultural colleges and experiment stations as well as with local authorities in the building of short sections of roads as object lessons; furnishing the expert supervision and securing the loan of the machinery, while the college or local contributors furnish the road materials, labor, fuel, etc., including grading wherever required. In each locality where such roads are built the natural conditions and materials are carefully inspected and studied and the road is constructed with great care, not merely to serve as a sample of the best that is practicable, but to be so adapted to the locality as to illustrate the best uses of local materials. During the construction of such roads, meetings or conventions are usually held where illustrated lectures and addresses are delivered on the various phases of the road subject.

SECTION OF FOREIGN MARKETS.

Chief, FRANK H. HITCHCOCK; Assistant Chief, FRANK R. RUTTER.

The Section of Foreign Markets has for its object the extension of the agricultural export trade of the United States. The organization of the Section was prompted by the need of wider foreign markets resulting from an extraordinarily rapid development of domestic agriculture.

The conditions of demand and supply in foreign countries are studied, and for this purpose the official statistics of production, importation, and exportation published by the various governments are chiefly used. These statistics are supplemented by further details obtained from reports of consular officers, from trade journals, and from various other sources of information. The official customs returns of the United States, so far as they relate to agricultural products, are also carefully examined, classified, and analyzed. Instances of increase or decrease are particularly studied to ascertain the causes of such movements with a view to suggesting means for further stimulating the trade or for removing obstacles that retard its natural growth. In cases of special importance, where printed returns and correspondence prove inadequate, a representative of the office is sent to obtain by personal investigation the information needed.

The many inquiries received regarding our foreign trade necessitate a large correspondence, which, however, has been greatly facilitated by the policy of incorporating in printed reports the information of most general interest.

Of the reports of the Office, three, represented for the current year by Bulletins Nos. 23, 24, and 25, are now issued as a regular annual series. The first gives the value and, wherever practicable, the quantity of the various agricultural products imported and exported during each year of the decade, but without detail as to countries of source or destination. That publication is supplemented by two fuller reports, one showing the various sources of each agricultural import and the other the distribution of each agricultural export for the last five years. Summary tables in these reports give the total agricultural imports and the total agricultural exports of the United States, with the several foreign countries and with our insular dependencies. The three bulletins together constitute a complete statistical exhibit of the agricultural import and export trade of this country.

Work has recently been begun on a new series of reports covering in the fullest possible manner the agricultural import trade of each of the leading European countries. As a means of indicating the lines of trade that afford the most promising opportunities for development, detailed statistics will be given as to the proportion of the various imports contributed by the United States and by its commercial rivals.

DIVISION OF ACCOUNTS AND DISBURSEMENTS.

Chief, F. L. EVANS; Assistant Chief, A. ZAPPONE; Cashier, EVERETT D. YERBY.

The Division of Accounts and Disbursements audits and pays all accounts and adjusts claims against the Department; decides questions involving the expenditure of public funds; prepares advertisements, schedules, and contracts for annual supplies, leases, agreements, letters of authority, and all letters to the Treasury Department and the Department of Justice; issues requisitions for the purchase of supplies and requests for passenger and freight transportation; prepares the annual estimates of appropriations; and transacts all other business relating to the financial interests of the Department.

LIBRARY.

Librarian, JOSEPHINE A. CLARK; Assistant Librarian, CLARIBEL R. BARNETT.

The Librarian purchases books and periodicals, and supervises their arrangement and cataloguing, also has charge of the preparation of bibliographies and similar publications.

